

Schools

Big Ocean, Big Data, Big Project: Souhegan Teacher Published by National Science Teachers Association

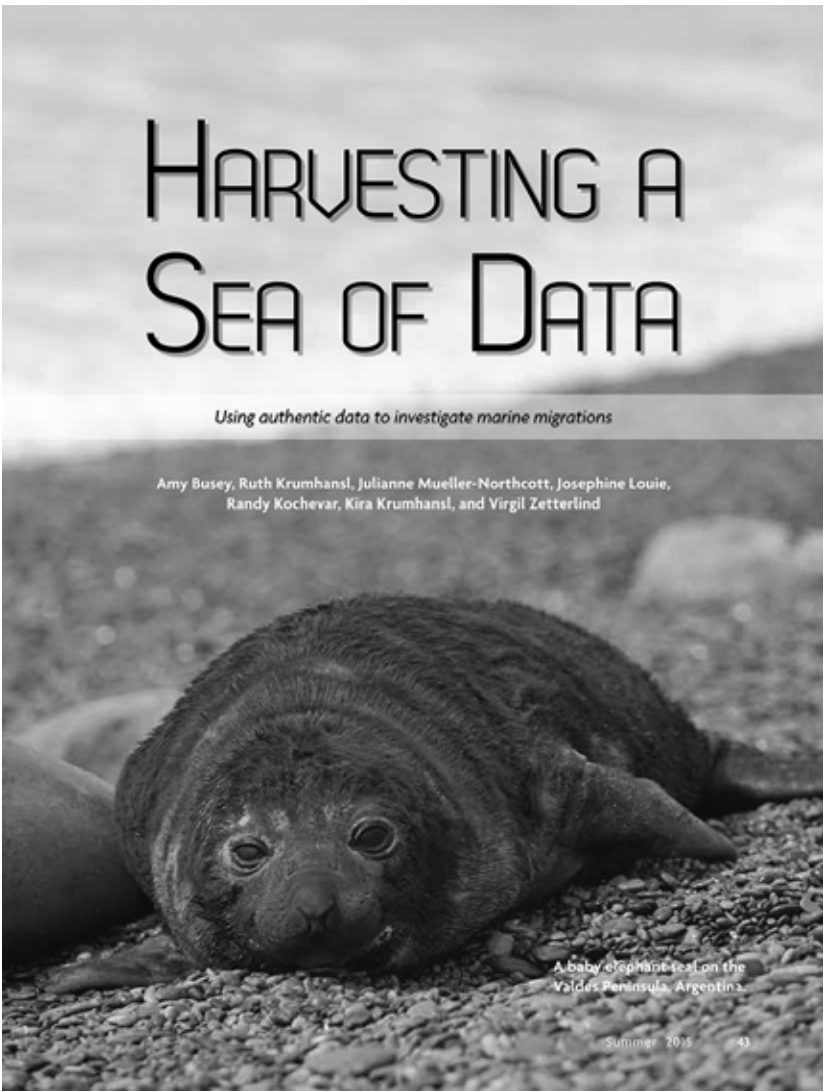
Marine Biology teacher, Julianne Mueller-Northcott publishes on Ocean Tracks curriculum

By JEANNE STURGES

What does a science classroom look like in the age of big data, inquiry-based labs and web-based technology? A lot like Julianne Mueller-Northcott's Marine Biology course at Souhegan High School in Amherst, New Hampshire. Many of us remember the days of recipe-like labs examining an onion skin under a microscope in order to "discover" what every science textbook could already tell you. An inquiry-based lab, though, tries to go a step further asking students to devise the question and the procedure, as well as the hypothesis and conclusion. But as Julianne explains, even in an inquiry-based lab environment, the data sets students generate as part of their inquiry are so small that the investigations don't often mirror "real science."

This dilemma is the premise of four years' worth of toil on a National Science Foundation-funded project Julianne has spear-headed in her classroom: Ocean Tracks. She and her co-authors are published in July's edition of Science Teacher, with the article entitled, "Harvesting a Sea of Data: Using authentic data to investigate marine migrations." Julianne, along with a team of scientists and researchers from the Educational Development Corp (EDC) in Massachusetts and Stanford University have published their work on developing a science curriculum that is "a unique model of how to enable high school students to engage with authentic scientific data," according to the program's abstract.

Julianne's article explains that Ocean Tracks is "an innovative program that provides students free access to authentic data collected from migrating elephant seals...



and satellites, as well as customized analysis tools modeled after those used by scientists. Ocean Tracks allows teachers and students to use large, professionally collected data sets to investigate scientific ques-

tions of current, real-world importance: What do marine animals' movements tell us about areas of the ocean that are critical in supporting biodiversity? In what ways are human activities affecting these

areas?"

What the Ocean Tracks program works to achieve is quite challenging because students do not have the same knowledge base and expertise as scientists. "So, we are creating better scaffolds for students to be able to accept this challenge," Julianne says. There is a huge shift now in science because so much of the data scientists need is available on the web, and as Julianne explains, "as a result there is a tremendous opportunity for students to access real data. The problem is that the web interfaces are designed for scientists, not students. The purpose of this project is for students to use the real data, but to have it be accessible to students," Julianne explains. Indeed, Ocean Tracks is intentionally addressing the scientific practices that the Next Generation Science Standards make explicit including: asking questions, analyzing and interpreting data, and supporting claims with evidence.

As Souhegan continues to align its science curriculum with the Next Generation Science Standards and include ever-more inquiry-based projects that are relevant and challenging to students, Julianne's recent publication is testament to the tremendous amount of dedication, work and expertise such an undertaking requires. For more information, visit: www.oceantracks.org

Excerpted from The Science Teacher, July 2015, published by the National Science Teachers Association (www.nsta.org) The article can be found here: http://www.nsta.org/exhibitsadv/2016/MediaKit/Sample_PDF/TSTSummer2015_complete.pdf

Students in the News

Mont Vernon Resident Alexander Bragdon Returns Following Intensive Research Project

WORCESTER, MA - Alexander Bragdon of Mont Vernon, N.H., a member of the class of 2016 majoring in computer science at Worcester Polytechnic Institute (WPI), recently completed an intense, hands-on research project in London. The project was titled Evaluating Combined Cooling, Heat and Power in Brent.

"The WPI project-based curriculum's focus on global studies brings students out of the classroom and their comfort zones and into the global community to apply

their knowledge to solve real problems," said Professor Richard Vaz, dean of the WPI Interdisciplinary and Global Studies Division. "Students are immersed in all aspects of a different culture, from the way people live and work to the values they hold to the foods they eat--all valuable perspectives for surviving and thriving in today's global marketplace."

Local residents graduate from Wentworth Institute of Technology

Boston, Mass. - Nathan P. Ouellette of Amherst has graduated from Wentworth Institute of Technology at its summer commencement on Aug. 16, 2015.

Flora & Fauna Presents Art Work by Artists Steffen Poltak and Colleen Pearce

MANCHESTER - The Derryfield School Lyceum Gallery proudly presents Flora & Fauna, featuring artwork inspired by nature. Continuing our celebration of the fifty years of dynamic arts education, Flora & Fauna bridges the natural world and fine art. This fall show offers unique interpretations of nature through painting and printmaking. Presenting work by Steffen Poltak and Colleen Pearce.

Steffen Poltak (Concord, NH) was fascinated with nature from a young age. While majoring in Biochemistry in college, Steffen expanded his artistic skill set by studying photography, digital imaging, and scientific art. He went on to earn a Ph.D. in Microbiology at the University of New Hampshire, where he studied microbial ecology and evolution of infectious bacteria, and then was a postdoctoral fellow at Harvard Medical School in the department of Microbiology and Molecular Genetics. Steffen's study of biology has consistently informed his art. In his most recent pieces, he has played with evolution and expressionism, using traditional painting and scientific illustration techniques to imagine alternative phenotypic ex-

pressions, or differences in patterns and color, for the animals he has studied.

Colleen Pearce (Harvard, MA) discovered her love of art at an easel in nursery school. She received a diploma from the School of the Museum of Fine Arts, and a BFA from Tufts University. While living in Australia, she earned a diploma in art history from the Gallery of New South Wales. Colleen has played an integral role as an educator, teaching at her alma matters, and as a guest lecturer at deCordova and Tufts on the topic of the development of art in children. Her artwork has been exhibited throughout the New England area.

Both Colleen Pearce and Steffen Poltak will visit classes at The Derryfield School campus this fall, and will share, first hand, their artistic approach, techniques, and experiences with the students and members of the community.

Flora and Fauna runs from September 3 through November 9. The Gallery is open 8:00a.m.-4:00p.m. weekdays. There will be a reception for the artists on Friday, November 6, from 5:30-7:00p.m.

"Hope for Gus" Goes to Mt. Everest



Gus Dreher with his mother, Tonya Dreher

By TONYA DREHER

AMHERST - The Hope for Gus Foundation, in partnership with donors, families and a major corporate sponsor will plan and lead a 17 day trek to Mount Everest base camp in Nepal in the Fall of 2015. The trek is the first of its kind to be led by the Foundation and builds off years of momentum generated by numerous physical challenge fundraisers led by our supporters.

I will never, ever forget the day my son, Gus was diagnosed with Duchenne muscular dystrophy. Our world crashed around us and every hope and dream we had for our boy faded away.

Duchenne is devastating and will slowly take away all of Gus' muscle function, and eventually end his life, if we do not find an effective treatment or a cure in time.

It is difficult to think of the simple dreams we once had for our family that we can no longer pursue - a family bike ride, walking on a beach together, hiking many mountains. Little things that my husband Steve and I dreamed of doing often with our kids when they were born. How quickly things change... last summer, Steve nearly broke his back carrying Gus up a fairly small local mountain, just because our boy wanted it so badly.

I've decided to challenge myself with something that will be difficult for me, but impossible for Gus to ever do. And I hope to raise money for a cure for DMD at the same time.

In October, 2015, I am going to trek to Mount Everest Base Camp. I am forming a team that will embark on a 17-day, 80-mile trek from Lukla to the Everest Base Camp on the Khumbu Glacier in Nepal.

I am focused on bringing other parents of boys with Duchenne on this trek (but others also!), because this journey is symbolic for us. As our boys lose their ability to walk, we will take on a difficult walk FOR THEM, and raise money for medical research at the same time.

So far, I have a team of 8!! Each person will raise a minimum of \$1000 for our mission, and is responsible for their travel costs. My goal is bigger. I would like to sponsor the parent (s) of a child with Duchenne who cannot afford this trip, but truly wants to do something big for their boy, and raise awareness for Duchenne. So after I reach the \$5000 mark, I will fundraise for a sponsorship for one family member.

All funds raised will go to our foundation, Hope for Gus, and we will choose one very promising therapy to fund through the Duchenne Alliance.

We will soon have a webpage dedicated to Everest to End Duchenne, where you can follow my team and our preparations for the trek, and also join us virtually in October when we embark on the adventure of a lifetime for our boys!

In the meantime, if you can help me reach my goal of \$10,000, please help to end this devastating disease that afflicts my little boy and thousands of others. Please give generously if you are able, as I promise that not a single dollar of your donation will be wasted. But if you can only give \$5 or \$10...that amount is just as important and appreciated to get us to our goal.

The HOPE-MEMORY FLAG is going to MT EVEREST, carrying 1000 names of children and young adults afflicted with Duchenne's Muscular Dystrophy (DMD).

There are 2 sections on the flag, one for those who are living in HOPE for a cure, and one for those who have passed away, and whose

MEMORY is being honored by family members. The flag will also feature the flags of all of the countries where the names originate. As of July 7th, 2015, there are over 600 submitted names from 12 countries!

The flag will be unfurled and photographed on the trek to Everest, with the mountain in the background. Arriving at Everest Base Camp, the flag will eventually be handed off to a technical team making a summit attempt. (We cannot guarantee the flag will make it to the summit of Everest!) All photos will be distributed free to many of the DMD FaceBook Groups. The Everest to End Duchenne expedition and the flag will dramatically raise awareness of DMD, and help to raise thousands of dollars to fund research for a cure for DMD.

The purpose of this fundraiser is to create a flag that is both attractive and worthy of carrying the 1000 names.



Everest To End Duchenne Expedition

Chris Balch holds the HOPE-REMEMBER flag with currently 700 names organized into 2 sections - those of children who live in hope for a cure, and those lost to Duchenne Muscular Dystrophy (DMD).

Names of 16 countries: Australia, Canada, Fiji, Indonesia, India, Ireland, Korea, Mexico, Netherlands, Norway, New Zealand, Philippines, S Africa, Scotland, UK, USA are included.

One of our sponsors is Eastern Mountain Sports.

We leave October 6th for Mt. Everest, Nepal with the to be carried by a team of climbers organized by the local NH charity, Hope For Gus, in Peterborough. A professional videographer is part of the expedition.

The DMD community has gone absolutely wild about it (Tens of thousands of people) with parents sending the names of their children to the world's tallest mountain.

It's an amazing story, and one that will only get better as it goes on. Updates from Everest, video clips, climber's stories, stories of the children and families sending names.

Community/Family Climbing at SHS

Monday Evenings, 6:30 - 8:30pm

Come climb with us on Souhegan High School's indoor rock-climbing wall. Ages 5 and up are welcome. Climbers will have the opportunity to push themselves and support others as they do so. All equipment will be supplied. No prior experience is required.

The sessions will be led by John Dowd, founding Souhegan faculty member and senior climbing instructor at the Hurricane Island Outward Bound School.

All proceeds will benefit the 2015 Joshua Tree Climbing Trip. \$5.00 pp. or \$20.00 per family. Questions? jdowd@sprise.com

Amherst PTA Membership Benefits Are For Anyone

AMHERST - Did you know anyone can join the Amherst PTA? Parents, teachers, grandparents, and friends! Dues are only \$10. Membership includes benefits at the national level including discounts at Staples, Hertz, and more. Dues DIRECTLY support programming to benefit teachers, students and the community - Invention Convention, visiting authors, holiday storytime, the PTA play, and much more made possible through membership!! Members are not required to volunteer time although there are many opportunities to engage if

interested. Please sign up TODAY! <http://amherstnhpta.org/forms.html>

Would you like an opportunity to partner with teachers to coordinate educational programs that knock your kids' socks off?! If so, the Amherst PTA wants you!! We are seeking Enrichment Coordinator positions for grades 1-4 at the Wilkins School. If interested, contact Christine Grayson at christinegrayson@yahoo.com. This is an important position that may be achieved mostly from home with a minimal time commitment.

Call for Souhegan High School Robotics Team Support

"For Inspiration and Recognition of Science and Technology" (FIRST) was founded by entrepreneur & inventor Dean Kamen in 1989 to inspire students to pursue engineering and science careers. "If we expect to remain the world leader, we must put more emphasis into mathematics and science at the high school level." The FIRST robotics program enables high school students to work hand-in-hand with professional engineers to solve a complex game challenge. The program uses the excitement of a sporting competition to engage students in engineering, mathematics, and physics principals.

The Souhegan High School FIRST Robotics team is in urgent need of mechanical and software engineers. The team requires mechanical designers and "handy" volunteers to transform a FIRST provided kit of parts into a 120 lb. robot. The software team uses the Java programming language to integrate a vast array of functional ele-

ments provided by the WPI robotics library. Team meetings begin on Wednesday, October 7th. The robotics team meets once a week through the rest of 2015. The FIRST Robotics Competition challenge is released in January and changes every year. The team designs, assembles, and tests a competition robot in six weeks and competes in two district competitions in the New England area.

The Souhegan High School robotics team has a proud history of very competitive robots. The Souhegan High School FIRST Robotics team won the 2014 Granite State District championship and qualified for the 2015 World Championship! FIRST is the most enriching extracurricular activity that high schools can offer their students. Interested individuals willing to support this noble activity are encouraged to contact Brian Walters (bfwalters@comcast.net or 424-8360) for more information.